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RESEARCH ARTICLE

Analysis of Adverse Event Notifications Within the Scope of Patient and Employee Safety: An Example of a Public Hospital

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Abstract

This study aimed to analyze the adverse events reported in a public hospital within the scope of patient and employee safety, to develop studies aimed at learning from errors and to increase the awareness of healthcare professionals and to increase the quality of healthcare service provision. The research was designed as a descriptive, cross-sectional, and retrospective quantitative research design. Data were obtained from the Hospital Information Management System and written records with the data collection form created by the researcher. Data were obtained from the adverse events reported between 01.01.2022 and 30.12.2023. According to the findings of the research; A total of 3447 patient safety adverse event reports were made in 2022, and it was determined that 19 of them were falls, 8 were medication safety, 5 were transfusion safety, and 3415 were laboratory safety. A total of 4788 patient safety adverse event reports were made in 2023, and it was determined that 37 of them were falls, 20 were medication safety, 2 were transfusion safety, and 4729 were laboratory safety. In 2022, a total of 111 employee safety undesirable incidents were reported, of which 59 were sharp-edged injuries, 9 were blood and body fluid splashes, and 45 were legal incidents. In 2023, a total of 120 employee safety undesirable incidents were reported, of which 63 were sharp-edged injuries, 6 were blood and body fluid splashes, and 51 were legal incidents. When the 2022-2023 undesirable incident reports are compared, it is seen that the number of reports has increased over the years, which indicates that a reporting culture has been formed in the institution. As a result of the research; It was determined that the most reported undesirable incidents were laboratory safety and sharp-edged injuries.

Keywords: *Patient safety, employee safety, adverse event reporting*

Öz

Bu çalışmada, bir kamu hastanesinde bildirimi yapılan istenmeyen olayların hasta ve çalışan güvenliği kapsamında analiz edilerek hatalardan öğrenmeye yönelik çalışmaların geliştirilmesi ve sağlık çalışanlarının farkındalıklarının artırılarak sağlık hizmet sunum kalitesinin artırılması amaçlanmıştır. Araştırma nicel araştırma tasarımı olan tanımlayıcı, kesitsel ve retrospektif olarak tasarlanmıştır. Veriler araştırmacı tarafından oluşturulan veri toplama formu ile Hastane Bilgi Yönetim Sistemi ve yazılı kayıtlardan elde edilmiştir. Veriler 01.01.2022-30.12.2023 tarihleri arasında bilidirimi yapılan istenmeyen olaylardan elde edilmiştir. Araştırmadan elde edilen bulgulara göre; 2022 yılında toplam 3447 hasta güvenliği istenmeyen olay bildirimi gerçekleşmiş olup bunların 19'unun düşme, 8'inin ilaç güvenliği, 5'nin transfüzyon güvenliği, 3415'inin laboratuvar güvenliği olduğu tespit edilmiştir. 2023 yılında toplam 4788 hasta güvenliği istenmeyen olay bildirimi gerçekleşmiş olup bunların 37'sinin düşme, 20'sinin ilaç güvenliği, 2'sinin transfüzyon güvenliği, 4729'sinin laboratuvar güvenliği olduğu tespit edilmiştir. 2022 yılında toplam 111 çalışan güvenliği istenmeyen olay bildirimi gerçekleşmiş olup bunların 59'unun kesici-delici alet yaralanması, 9'unun kan ve vücut sıvısı sıçraması, 45'inin hukuka yansımış olay olduğu tespit edilmiştir. 2023 yılında toplam 120 çalışan güvenliği istenmeyen olay bildirimi gerçekleşmiş olup bunların 63'ünün kesici-delici alet yaralanması, 6'sının kan ve vücut sıvısı sıçraması, 51'inin hukuka yansımış olay olduğu tespit edilmiştir. İstenmeyen olay bildirimlerinin 2022-2023 yılları karşılaştırıldığında bildirim sayısının yıllara göre artış gösterdiği ve bununda kurumda bir raporlama kültürünün oluştuğunu göstermektedir. Araştırma sonucunda; bilidirimi en fazla yapılan istenmeyen olayların laboratuvar güvenliği ve kesici-delici alet yaralanmalarının olduğu tespit edilmiştir.

Anahtar Kelimeler: *Hasta güvenliği, çalışan güvenliği, istenmeyen olay bildirimi, raporlama kültürü*

Introduction

Healthcare is evolving globally into healthcare systems operating in increasingly complex environments. While new treatment methods, newly developing medical technologies and care models have the potential to improve the quality of health services, they can also pose new threats to safe care. Patient safety is a fundamental principle of healthcare, and safe healthcare is viewed as a fundamental human right. The World Health Organization defines patient safety as "a framework of organized activities in healthcare that creates cultures, processes, procedures, behaviors, technologies and environments that consistently and sustainably reduce risks, reduce the occurrence of preventable harm, reduce the likelihood of errors and reduce their impact when they do occur." Since healthcare is predominantly a service, it is always produced together with users. Providing safe care requires that patients be informed, included in the health care process, and treated in full cooperation with healthcare professionals in their care. During the health service delivery process, the working conditions, health and safety of healthcare professionals are also important in ensuring that patients receive safe, effective and quality healthcare services (Meydanlıoğlu, 2013). The World Health Organization defines employee safety as "maximizing the physical, mental and social condition of working individuals, taking and implementing protective measures to minimize risks to the employee's health, and suiting the employee's job and the job to the employee." Activities aimed at ensuring and maintaining patient and employee safety in all health institutions in our country are carried out under the umbrella of the Turkish Health Quality System, established by the Department of Health Quality Accreditation and Employee Rights under the General Directorate of Health Services. With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are organized to ensure reliable service and a reliable working environment. Hazards in healthcare delivery environments not only endanger the safety of healthcare personnel, but also cause errors regarding patient safety in hospitals. Protecting the healthcare worker from the dangers in working conditions also means protecting the patient from the dangers. For this reason, it is important to evaluate possible hazards and risk factors in work environments for both patients and employees and to report any incident when it occurs. With these notifications, possible dangers are identified and eliminated, and the risks of harm to patients and employees are reduced (Sezgin, 2007; Bozoğlan, 2015). In order to create an effective patient and employee safety culture in healthcare institutions, it is necessary to build a reporting system that allows errors to be reported, recorded, classified and analyzed (Tak, 2010). The name of the system that allows notification of errors or near misses within the scope of patient and employee safety in healthcare institutions is defined as "Adverse Event Notification System" in the Healthcare Quality Standards Hospital Set Version 6. Undesirable events are defined as "events that negatively affect or may affect the safety of the patient, patient's relatives, employees and/or other people in the healthcare institution." (Sağlık Bakanlığı 2020). Knowing what causes undesirable events and finding solutions to errors by performing root cause analysis will create a culture of learning from mistakes, ensure patient and employee safety, and increase service quality. In this context, our study aims to compare the undesirable events reported over the years and analyze them within the scope of patient and employee safety, to develop studies aimed at learning from mistakes, and to increase the quality of health service delivery by increasing the awareness of healthcare professionals about continuous improvement.

Literature Review

Patient Safety

Patient safety is a fundamental principle of healthcare, and safe healthcare is viewed as a fundamental human right. The World Health Organization defines patient safety as "a framework of organized activities in healthcare that creates cultures, processes, procedures, behaviors, technologies and environments that consistently and sustainably reduce risks, reduce the occurrence of preventable harm, reduce the likelihood of errors and reduce their impact when they do occur." Patient safety has been broadly defined as "the prevention and recovery of adverse outcomes or injuries resulting from healthcare processes" (Vincent, 2010). Patient safety stakeholders worldwide have taken a number of measures to promote patient safety. One of these is the initiation of patient safety goals. National Patient Safety Goals were published for the first time in the world by Joint Commission International (JCI) in 2002 (JCAHO, 2002). Thus, the formulation and implementation of patient safety goals has been initiated in countries around the world (Catalano et al., 2008). Australia and the United Kingdom have taken similar actions through the Australian Council for Safety and Quality in Healthcare's Priority Programs and the United Kingdom's National Patient Safety Alerts initiatives (JCAHO, 2003). Activities aimed at ensuring and maintaining patient and employee safety in all health institutions in our country are carried out under the umbrella of the Turkish Health Quality System, established by the Department of Health Quality Accreditation and Employee Rights under the General Directorate of Health Services. With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are organized to ensure reliable service and a reliable working environment. VII. organized by the General Directorate of Health Services, Health Quality Accreditation and Employee Rights Department, on 14-17 December 2022. "National Patient Safety Goals" were declared at the International Congress on Performance and Quality in Health. National Patient Safety objectives Safe Surgery, Safe Birth, Radiation Safety, Information Security, Material and Device Safety of Falls, Facility Safety, Patient Safety in Diagnosis, Correct Identification of Patients, Safe Transfer of Patients, Combating Healthcare-Associated Infections, Medication Safety, Blood Safety and Management, Safe Patient Transfer, Newborn Safety, Airway Safety, Cardiac Arrest Management, Fighting Venous Thromboembolism, Prevention of Pressure Sores, Nasogastric Tube and Patient Safety, Participation of Patient and Patient Relatives, Fighting Postoperative Delirium in Elderly Patients, Learning from Mistakes. It consists of 22 titles (Sağlık Bakanlığı 2022).

Employee Safety

The World Health Organization defines employee safety as "maximizing the physical, mental and social condition of working individuals, taking and implementing protective measures to minimize risks to the employee's health, and suiting the employee's job and the job to the employee." Health institutions are in the very dangerous class according to the "Danger Class List Communiqué" published on March 29, 2013. Since healthcare workers work in institutions that are classified as very dangerous, they are at risk of being exposed to many dangers. This situation negatively affects the safety of both employees and patients. It is important for healthcare workers to be protected from errors caused by the work environment for both patient and employee safety. In this context, it is necessary to analyze the hazards and risks that healthcare workers may be exposed to in the working environment and reduce the risks of workplace-related harm to healthcare workers and patients. According to the "Occupational Health and Safety Risk Assessment

Regulation" published on December 29, 2012, Risk Assessment Teams have been established in healthcare institutions. The Risk Assessment Team carries out the work of identifying hazards, determining and analyzing risks. With these studies, possible dangers that healthcare workers may be exposed to are revealed and eliminated (Sezgin, 2007; Bozoğlan, 2015). The United States National Institute for Occupational Safety and Health (NIOSH) defines a healthy hospital environment as "all kinds of hazards, including physical, chemical, biological and ergonomic, that occur during the work and are harmful to health, and the causes of these hazards." It is defined as "the situation where work accidents and occupational diseases do not occur due to possible risks". Those working in the healthcare field are exposed to chemical, biological and physical hazards, especially since hospitals are classified as very dangerous. Activities aimed at enabling healthcare workers to operate in a safe working environment and also improving the quality of healthcare services are carried out internationally by Joint Commission International (JCI), which is a unit of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and nationally by Health Quality Accreditation, affiliated with the General Directorate of Health Services. It is carried out under the umbrella of the Turkish Health Quality System established by the Department of Health and Employee Rights (Sağlık Bakanlığı 2017). With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are organized to ensure reliable service and a reliable working environment (Sağlık Bakanlığı 2011).

Undesirable Event

Undesirable Events are defined in the Health Quality Standards Version 6.0 as "Events that negatively affect or may affect the safety of patients, patient relatives, employees and/or other people in the healthcare institution" (Ministry of Health, 2020). This system aims to ensure patient and employee safety by creating a culture of learning from mistakes and reporting in healthcare institutions. The system is organized under two main headings: patient and employee safety. Healthcare facility employees can report near misses and undesirable events concerning patient or employee safety to the quality unit via the Hospital Information Management System or via a form. Unwanted event notifications are made under the topics specified in Table 1. In healthcare institutions, root cause analyzes are conducted for undesirable event reports concerning patient and employee safety and corrective and remedial actions are planned.

Table 1. Adverse event reporting topics

Patient Safety	Employee Safety
Drug Safety	Physical Exposure
Surgical Safety	Biological Exposure (Sharps, Blood and Body Fluids Splash)
Transfusion Safety	Psychosocial Exposure
Laboratory Safety	Chemical Exposure
Fall	Radiological and Nuclear Exposure
Incidents Reflected in Law	Near Miss Incidents
Near Miss Incidents	

Error is defined as the failure to perform a planned action as intended or the use of the wrong plan to achieve a goal (Liang, 2002; IOM, 1999). According to James Reason, errors result from two types of errors. The first is when the correct action is not performed as intended (execution error) or when the initially planned action is incorrect (planning error) (Reason, 1990). Errors can occur at every stage of the nursing process (IOM, 1999). The NPSF defines medical error as an unintended consequence caused by a specific deficiency in the provision of medical care (NPSF, 2003). Although Leape defines medical error as an unintentional act or failure to achieve an intended outcome (Leape, 1994), it has also been defined as negligence in the provision of medical care (Grober & Bohnen, 2005).

Adverse events: Patients are harmed by events that affect them. Events that harm patients are divided into two categories: sentinel events and adverse events (CPSI, 2011).

A sentinel event (unexpected event) can be defined as an event that is not related to the natural course of the disease and that causes a significant loss of vital functions, serious physical or psychological trauma, or death to the patient. Examples: Wrong blood transfusion, abduction of an infant or child, a fall of a patient that causes serious loss of function, poisoning, placement of the baby with the wrong family, wrong treatment plan (Akgün, 2014), wrong place, wrong procedure on the wrong patient; suicide, contaminated organ and tissue transplantation, rape, workplace violence, and transmission of chronic or terminal diseases and conditions (JCI, 2017).

Adverse events are unwanted negative events that result from a medical intervention and are independent of the patient's underlying disease (WHO, 2010; IOM, 1999). Adverse events can be preventable or unavoidable.

No Harm: The incident reached the patient but no harm was done. The patient was given the wrong blood transfusion but the patient did not suffer any serious harm because the blood type was not compatible (CPSI, 2011).

Near-Miss Detection: These are incidents where the error is noticed just before it reaches the patient. An example of a near-miss is the blood product being brought to the wrong patient's room and the error being noticed just before the transfusion begins (CPSI, 2011).

Near-Miss Events: This term is also used in the sense of error and refers to the failure or failure to perform a procedure or event that has the potential to harm the patient without harming the patient (WHO, 2005).

Sentinel (unwanted) Events: Refers to an unexpected event that represents death, serious physical or psychological injury, or the risk of such events. This term includes serious injuries, especially loss of limb or function (Akgün, 2014; WHO, 2009).

In the studies conducted, undesirable events are examined by dividing them into different categories. According to the GRS, the Ministry of Health has explained undesirable events as follows:

- Drug safety (Includes errors related to all processes related to drugs in the health institution).
- Laboratory Safety (Includes errors related to pre-analytical, analytical and post-analytical processes of laboratories.)
- Surgical safety (Includes errors related to preparation, operation time and postoperative processes of surgical procedures) (Ministry of Health, 2020).

Method

Knowing the causes of adverse events in healthcare institutions and finding solutions to errors by conducting root cause analysis studies are important in ensuring patient and employee safety by creating a culture of learning from errors. This study, which aims to analyze the reported adverse events within the scope of patient and employee safety by comparing them according to years and developing studies aimed at learning from errors, increasing the awareness of healthcare professionals about continuous improvement and increasing the quality of healthcare service delivery, has been designed as a descriptive, cross-sectional and retrospective quantitative research design. The research was carried out between August and January 2024 by collecting the adverse event notifications made to the quality unit of a public hospital in 2022 and 2023 using the data collection form created by the researcher and the Hospital Information Management System and data obtained from written records. The analysis of the data obtained in the study was carried out with the SPSS 27.0 program. Descriptive statistical methods such as number, percentage, frequency and average were used in the evaluation of the data. Before starting the research, permission was obtained from the hospital administration with a

petition, and the study was conducted by obtaining Ethics Committee Approval No. 2023/318 from the Istanbul University-Cerrahpaşa Social and Human Sciences Research Ethics Committee. The fact that the research was conducted in a single center and cannot be generalized constitutes the limitation of the research. As an inclusion criterion, all patient and employee safety notifications made through the hospital's adverse event notification system in 2022 and 2023 were included, and as an exclusion criterion, notifications made in violation of the confidentiality principle of the adverse event notification system were excluded from the evaluation.

Findings

As a result of analyzing the data collected from this study, the following findings were obtained. According to the results obtained from the research, patient safety adverse event notifications for 2022 and 2023 are presented in Table 2 and Table 3.

Table 2. 2022 patient safety adverse event notifications

2022	Fall	Surgical safety	Drug safety	Transfusion safety	Laboratory safety	Near miss incident	Total
January	2	0	0	0	141	0	143
February	0	0	0	0	71	0	71
March	1	0	3	3	99	0	106
April	3	0	2	0	181	0	186
May	1	0	0	0	155	0	156
June	1	0	0	0	176	0	177
July	1	0	0	1	59	0	61
August	1	0	1	0	672	0	674
September	2	0	1	0	176	0	179
October	2	0	0	0	619	0	621
November	3	0	0	0	542	0	545
December	2	0	1	1	524	0	527
Total	**19**	**0**	**8**	**5**	**3415**	**0**	**3447**

When Table 2 is examined, a total of 3447 patient safety adverse events were reported in 2022, and it was determined that 19 of them were falls, 8 were drug safety, 5 were transfusion safety, and 3415 were laboratory safety.

Table 3. 2022 subparameters of patient safety notifications

Types of errors	Subparameters	N	%
Fall	Wet/slippery floor	3	15,78
	Patient-related (balance problem, weakness due to old age, muscle)	9	47,36
	Patient relative's fault (caregiver's inadequacy)	5	26,31
	Bedside open	2	10,52
	Other	0	0
	Total	**19**	**100**
Drug safety	Wrong dose order	0	0
	Wrong drug order	0	0
	Wrong drug preparation	0	0
	Transfer of wrong drug from pharmacy	3	37,50
	Wrong drug order in electronic environment	0	0
	Lack of communication	2	25
	Wrong drug packaging	2	25
	Temperature and humidity impropriety	0	0
	Illegible handwriting	0	0
	Wrong drug administration	0	0
	Other	1	12,50
	Total	**8**	**100**
Surgical Safety	Failure to mark the surgical site/side	0	0
	Failure to verify patient identity, surgical site and surgical procedure	0	0
	Failure of team members to introduce themselves	0	0
	Failure to check that the material is ready and sterile	0	0
	Other	0	0
	Total	**0**	**0**
Transfusion safety	Incorrect blood and blood product request	0	0
	Incorrect blood product transfer from laboratory	0	0
	Inappropriate transport container	1	20
	Inappropriate transport temperature conditions	1	20
	Non-identification process	0	0
	Blood group incompatibility	0	0
	Crosh mach incompatibility	0	0
	Development of allergic reaction	3	60
	Expired blood and blood products	0	0
	Other	0	0
	Total	**5**	**100**
Laboratory safety	Clotted sample	605	17,71
	Insufficient sample	845	24,74
	Hemolyzed sample	1588	46,50
	Improperly stored sample	0	0
	Transfer time overrun	62	1,81
	Improper transfer conditions	0	0
	Improperly collected sample	55	1,61
	Device failure	54	1,58
	Faulty sample container	45	1,31
	Lipidemic sample	26	0,76
	Other	135	3,95
	Total	**3415**	**100**

The data regarding the sub-parameters of adverse events reported within the scope of patient safety in 2022 are given in Table 3. A total of 19 fall incidents occurred in 2022, 3 of which were due to wet/slippery ground, 9 due to patient-related (balance problem, weakness due to old age, muscle), 5 due to the patient's relative's error (caregiver's inadequacy), and 2 due to the bedside being left open. Of the drug safety notifications in 2022, 3 were due to incorrect drug transfer from the pharmacy, 2 due to lack of communication, 2 due to incorrect drug packaging, and 1 due to other reasons. Of the transfusion safety notifications in 2022, 1 was due to an inappropriate transportation container, 1 due to inappropriate transportation temperature conditions, and 3 due to the development of an allergic reaction. Of the laboratory safety notifications in 2022, 605 were for clotted samples, 845 for insufficient samples, 1588 for hemolyzed samples, 62 for transfer time overruns, 55 for improperly collected samples, 54 for device failures, 45 for faulty sample containers, 26 for lipidemic samples, and 135 for other reasons.

Table 4. 2023 patient safety adverse event notifications

2023	Fall	Surgical safety	Drug safety	Transfusion safety	Laboratory safety	Near miss incident	Total
January	9	0	0	0	431	0	440
February	2	0	2	1	448	0	453
March	4	0	3	0	419	0	426
April	2	0	4	1	321	0	328
May	1	0	6	0	443	0	450
June	1	0	2	0	372	0	375
July	3	0	0	0	345	0	348
August	1	0	1	0	358	0	360
September	3	0	0	0	332	0	335
October	4	0	0	0	377	0	381
November	3	0	0	0	363	0	366
December	4	0	2	0	520	0	526
Total	**37**	**0**	**20**	**2**	**4729**	**0**	**4788**

When Table 3 is examined, a total of 4788 patient safety adverse events were reported in 2023, and it was determined that 37 of them were falls, 20 were drug safety, 2 were transfusion safety, and 4729 were laboratory safety.

Table 5. 2023 subparameters of patient safety notifications

Types of errors	Subparameters	N	%
Fall	Wet/slippery floor	4	10,81
	Patient-related (balance problem, weakness due to old age, muscle)	15	40,54
	Patient relative's fault (caregiver's inadequacy)	17	45,94
	Bedside open	0	0
	Other	1	2,70
	Total	**37**	**100**
Drug safety	Wrong dose order	0	0
	Wrong drug order	2	10
	Wrong drug preparation	4	20
	Transfer of wrong drug from pharmacy	2	10
	Wrong drug order in electronic environment	1	5
	Lack of communication	5	25
	Wrong drug packaging	2	10
	Temperature and humidity impropriety	3	15
	Illegible handwriting	1	5
	Wrong drug administration	0	0
	Other	0	0
	Total	**20**	**100**
Surgical Safety	Failure to mark the surgical site/side	0	0
	Failure to verify patient identity, surgical site and surgical procedure	0	0
	Failure of team members to introduce themselves	0	0
	Failure to check that the material is ready and sterile	0	0
	Other	0	0
	Total	**0**	**0**
Transfusion safety	Incorrect blood and blood product request	0	0
	Incorrect blood product transfer from laboratory	0	0
	Inappropriate transport container	0	0
	Inappropriate transport temperature conditions	0	0
	Non-identification process	0	0
	Blood group incompatibility	0	0
	Crosh mach incompatibility	0	0
	Development of allergic reaction	2	100
	Expired blood and blood products	0	0
	Other	0	0
	Total	**2**	**100**
Laboratory safety	Clotted sample	1065	22,52
	Insufficient sample	1141	24,12
	Hemolyzed sample	1701	35,96
	Improperly stored sample	30	0,63
	Transfer time overrun	21	0,44
	Improper transfer conditions	12	0,25
	Improperly collected sample	126	2,66
	Device failure	35	0,74
	Faulty sample container	112	2,36
	Lipidemic sample	0	0
	Other	486	10,27
	Total	**4729**	**100**

The data regarding the sub-parameters of adverse events reported within the scope of patient safety in 2023 are given in Table 5. A total of 37 fall incidents occurred in 2023, 4 of which were due to wet/slippery ground, 15 due to patient-related (balance problem, weakness due to old age, muscle), 17 due to the patient's relative's error (caregiver inadequacy), and 1 due to other reasons. Of the drug safety notifications in 2023, 2 were due to requesting the wrong drug, 4 due to preparing the wrong drug, 2 due to transferring the wrong drug from the pharmacy, 1 due to requesting the wrong drug electronically, 5 due to lack of communication, 2 due to incorrect drug packaging, 3 due to temperature and humidity incompatibility, and 1 due to illegible handwriting. Of the transfusion safety notifications in 2023, 2 were due to allergic reactions. Of the laboratory safety notifications in 2023, 1065 were for clotted samples, 1141 for insufficient samples, 1701 for hemolyzed samples, 30 for improperly stored samples, 21 for transfer time overruns, 126 for improperly collected samples, 35 for device failures, 112 for faulty sample containers, and 486 for other reasons.

According to the results obtained from the research, employee safety adverse event notifications for 2022 and 2023 are presented in Table 6 and Table 5.

Table 6. 2022 employee safety adverse event notifications

2022	Cutting Drilling Tool Asst.	Blood and Body Fluid Splash	Incident Reflected in Law	Miss Incident	Total
January	4	2	6	0	12
February	5	1	4	0	10
March	5	1	4	0	10
April	1	0	4	0	6
May	7	0	3	0	11
June	5	0	7	0	12
July	4	1	1	0	6
August	6	1	9	0	17
September	5	0	3	0	8
October	2	3	1	0	7
November	9	0	0	0	6
December	4	0	3	0	6
Total	**57**	**9**	**45**	**0**	**111**

When Table 6 is examined, a total of 111 employee safety adverse events were reported in 2022, and it was determined that 57 of them were sharp object injuries, 9 were blood and body fluid splashes, and 45 were legal incidents.

Table 7. 2023 employee safety adverse event notifications

2023	Cutting Drilling Tool Asst.	Blood and Body Fluid Splash	Incident Reflected in Law	Near Miss Incident	Total
January	6	0	6	0	11
February	4	0	2	0	7
March	3	1	4	0	8
April	6	0	2	0	8
May	6	1	4	0	11
June	3	0	8	0	11
July	9	0	7	0	16
August	6	0	3	0	9
September	2	1	2	0	5
October	4	0	4	0	9
November	9	1	6	0	16
December	5	2	2	0	9
Total	**63**	**6**	**51**	**0**	**120**

When Table 7 is examined, a total of 120 employee safety adverse events were reported in 2023, and it was determined that 63 of them were sharp object injuries, 6 were blood and body fluid splashes, and 51 were legal incidents.

Table 8. 2022-2023 Socio-demographic information of healthcare personnel who reported adverse events

Types of errors	*Socio-demographic information*	2022		2023	
Cutting Drilling Tool Asst.	**Gender**	**N**	**%**	**N**	**%**
	Female	32	56,14	48	76,19
	Male	25	43,86	15	23,81
	Total	**57**	**100**	**63**	**100**
	Age	**N**	**%**	**N**	**%**
	24-29	35	61,42	21-25 19	30,15
	30-35	10	17,54	26-30 29	46,03
	36-41	8	14,03	31& 15	23,82
	42 &	4	7,01	**Total 63**	**100**
	Total	**57**	**100**		
	Title	**N**	**%**	**N**	**%**
	Dentist	1	1,75	0	0
	Midwife	1	1,75	8	12,69
	General practitioner	6	10,52	6	9,52
	Specialist physician	1	1,75	0	0
	Cleaning staff	15	26,34	10	15,87
	Nurse	33	57,89	37	58,76
	laboratory technician	0	0	1	1,58
	x-ray technician	0	0	1	1,58
	Total	**57**	**100**	**63**	**100**
	Educational Status	**N**	**%**	**N**	**%**
	Elementary School	2	3,52	4	6,34

	Middle School	3	5,26	1	1,58
	High School	14	24,56	11	17,46
	Associate Degree	0	0	5	7,93
	Undergraduate	38	66,66	42	66,69
	Total	**57**	**100**	**63**	**100**
	Unit worked	**N**	**%**	**N**	**%**
	Emergency room	37	64,91	44	69,84
	Operating room	0	0	2	3,17
	Polyclinic	5	8,77	5	7,93
	Intensive care	5	8,77	5	7,93
	Inpatient service	9	15,78	6	9,59
	Delivery room	0	0	1	1,58
	Blood collection unit	1	1,78	0	0
	Total	**57**	**100**	**63**	**100**
Blood and Body Fluid Splash	**Gender**	**N**	**%**	**N**	**%**
	Female	5	55,55	6	100
	Male	4	44,45	0	0
	Total	**9**	**100**	**6**	**100**
	Age	**N**	**%**	**N**	**%**
	24-29	6	66,66	23-25 3	50
	30-35	2	22,22	26-28 3	50
	36-41	1	11,12		
	Total	**9**	**100**	**6**	**100**
	Title	**N**	**%**	**N**	**%**
	Dentist	0	0	0	0
	Midwife	0	0	1	16,66
	General practitioner	1	11,11	2	33,36
	Specialist physician	0	0	0	0
	Laboratory technician	2	22,22	1	16,66
	Cleaning staff	0	0	1	16,66
	Medical waste staff	0	0	0	0
	Nurse	6	66,67	1	16,66
	Total	**9**	**100**	**6**	**100**
	Educational Status	**N**	**%**	**N**	**%**
	Elementary School	0	0	0	0
	Middle School	0	0	0	0
	High School	1	11,11	0	0
	Associate Degree	2	22,22	2	33,33
	Undergraduate	6	66,67	4	66,67
	Total	**9**	**100**	**6**	**100**
	Unit worked	**N**	**%**	**N**	**%**
	Emergency room	3	33,33	3	50
	Operating room	1	11,11	0	0
	Polyclinic	2	22,22	0	0
	Laboratory	2	22,22	1	16,67
	Intensive care	0	0	1	16,67
	Inpatient service	1	11,12	0	0
	Delivery room	0	0	1	16,66
	Blood collection unit	0	0	0	0
	Total	**9**	**100**	**6**	**100**
Incident Reflected in Law	**Gender**	**N**	**%**	**N**	**%**
	Female	26	57,77	34	66,66
	Male	19	42,23	17	33,34
	Total	**45**	**100**	**51**	**100**
	Age	**N**	**%**	**N**	**%**
	26-30	11	24,44	18	35,29
	31-35	19	42,23	20	39,22
	36 ve üzeri	15	33,33	13	25,49
	Total	**45**	**100**	**51**	**100**
	Title	**N**	**%**	**N**	**%**
	Physician	34	75,55	36	70,58
	Midwife	1	2,23	0	0
	Nurse	10	22,22	9	17,66
	Security personnel	0	0	2	3,92
	Data entry personnel	0	0	4	7,84
	Total	**45**	**100**	**51**	**100**
	Educational Status	**N**	**%**	**N**	**%**
	Associate Degree	0	0	5	9,81
	Undergraduate	45	100	46	90,19
	Total	**45**	**100**	**51**	**100**
	Unit worked	**N**	**%**	**N**	**%**
	Emergency room	19	42,23	21	41,17
	Polyclinic	26	57,77	30	58,83
	Total	**45**	**100**	**51**	**100**
	Type of incident reflected in law	**N**	**%**	**N**	**%**
	Verbal violence	42	93,34	43	84,32
	Verbal violence &Physical violence	3	6,66	8	15,68
	Total	**45**	**100**	**51**	**100**
	Total	**111**	**100**	**120**	**100**

In 2022, 57 sharp object injuries were reported. When examined according to the gender variable, 54.16% of the 57 employees were female and %43.86 were male. When their distribution by age groups was examined, 61.42% were in the 24-29 age group. When their distribution by occupational groups was examined, 57.89% were nurses and when their education status was examined, 66.66% were bachelor's degree graduates. 64.91% of sharp object injuries occurred in the emergency room.

In 2022, 9 blood and body fluid splash incidents occurred. Of the 9 employees exposed to blood and body fluid splash incidents, 5 were female and 4 were male. 66.66% of the employees exposed to the incident were in the 24-29 age group. When looking at the distribution of occupational groups, 66.67% of those exposed to blood and body fluids are nurses and 66.67 are undergraduate graduates. 33.33% of blood and body fluid splash incidents occurred in the emergency room.

A total of 45 incidents reflected in the law occurred in 2022. 57.77% of the employees exposed to the incident are female and 42.23% are male. When their distribution by age groups is examined, 42.23% are in the 31-35 age group. When looking at their distribution by occupational groups, 75.55% are physicians and 100% are undergraduate graduates. 57.77% of the incidents occurred in the polyclinic. When the type of incidents reflected in the law is examined, it was determined that 93.34% was verbal violence and 6.66% was both verbal and physical violence.

In 2023, 63 sharp object injuries were reported. When examined according to the gender variable, 76.19% of the 63 employees were female and 23.81% were male. When their distribution by age groups was examined, 46.03% were in the 26-30 age group. When their distribution by occupational groups was examined, 58.76% were nurses and when their education status was examined, 66.69% were bachelor's degree

graduates. 69.84% of sharp object injuries occurred in the emergency room.

In 2023, 6 blood and body fluid splash incidents occurred. 100% of the 6 employees exposed to blood and body fluid splash incidents were female. 50% of the employees exposed to the incident were in the 23-25 age group and 50% were in the 26-28 age group. When looking at the distribution of occupational groups, 33.36% of those exposed to blood and body fluids are general practitioners and 66.67 are undergraduate graduates. 50% of blood and body fluid splash incidents occurred in the emergency room.

A total of 51 incidents reflected in the law occurred in 2023. 66.66% of the employees exposed to the incident were female and 33.34% were male. When their distribution by age groups was examined, it was determined that 39.22% were in the 31-35 age group. When looking at their distribution by occupational groups, 70.58% are physicians and 90.19% are undergraduate graduates. 58.83% of the incidents occurred in the polyclinic. When the type of incidents reflected in the law was examined, it was determined that 84.32% was verbal violence and 15.68% was both verbal and physical violence.

Discussion and Conclusion

In this study, the undesirable events of a public hospital reported within the scope of Patient and Employee safety for the years 2022 and 2023 were analyzed. According to the analysis results, a total of 3471 patient safety notifications were made in 2022 and a total of 4833 adverse event notifications were made in 2023. Of the incidents reported within the scope of patient safety in 2022, 97.83% will be laboratory safety errors, 0.51% will be fall events, 0.23% will be medication safety errors, 0.14% will be transfusion safety errors, 1% will be laboratory safety errors. It was determined that 26 of them consisted of events reflected in the law. In 2023, 97.70% of the incidents reported within the scope of patient safety will be laboratory safety errors, 0.76% will be fall incidents, 0.41% will be medication safety errors, 0.04% will be transfusion safety errors, 1% will be laboratory safety errors. It was determined that 0.07% of the cases were made up of events reflected in the law. Cakmak et al. (2018) found that 87.37% of the safety reporting notifications made in Turkey in 2016 were laboratory safety errors, 4.90% were surgical errors, 4.61% were medication errors, and 3.12% were laboratory safety errors. It has been determined that falls occur. According to the safety reporting system statistics of the Ministry of Health (2017), 84.60% of the safety reporting notifications made in Turkey in 2017 were laboratory errors, 6.42% were surgical safety errors, 4.99% were medication errors, 3.99 of them are falling errors. Akar et al. (2019) analyzed the incidents reported within the scope of patient safety in a training and research hospital between 2016 and 2018, and found that 34.78% of the reported incidents were falls, 13.04% were medication errors, 8.69% were medication errors. It was determined that 4.34% were reported as blood transfusion errors, 4.34% were reported as surgical safety errors, and 39.13% were reported as other. Aygin et al. (2020) found that the most frequently reported medication errors were "administration of the wrong medication (44.8%)", "administration of medication to the wrong patient (37.3%)", "administration of the wrong dose of medication (35.8%)". Karagözoğlu et al. (2019) found that the most frequently reported medication errors were "ordering the wrong medicine (24%)", "administering the wrong medicine (37.7%)", "administering the medicine at the wrong time (24%)", "wrong medicine being taken from the pharmacy". (27%)", "drugs not arriving from the pharmacy under appropriate conditions (17.2%)", "records received incorrectly (15.7%)", "other (7.4%)". In the study conducted by Aslan (2020), it was determined that 24.66% of the reported errors were medication errors, 4.27% were blood and blood product errors, and 10.82% were falls.

Wundavalli et al. (2018) found in their study in India that 30% of medication errors were administration errors. Alrwisan et al. (2011) in their study evaluating electronic reports in Scotland; It was determined that 6.1% of the incidents caused harm to the patient, 59% of the errors occurred in the drug administration phase, 10.8% occurred in the administration/prescribing phase, and 9.9% occurred in the preparation

phase/dose adjustment phase. Ernawati et al. (2014) states that most medication errors are caused by administration errors (59%), order/prescription errors (20%), recording errors (15%), and preparation/dose adjustment errors (14%). In his study examining adverse events related to drugs reported based on patient safety data, Sørensen (2013) found that 31% of those providing information were at the consultation/prescription stage, 29% at the use stage, and 19% at the preparation/dose stage.

Recording errors in patients who received blood transfusions in Canada between 2008 and 2017 were examined to identify recording errors in the national database, characterize these errors, identify critical high-risk failure points, and identify needs for system re-evaluation and redesign. During the research, 554 registration errors were reported in 10 hospitals in three provinces. The overall capture error per sample collected in the transfusion laboratory is 5.4/10,000; No significant change in the overall error rate was reported from 2008 to 2017 ($p = 0.5$). The most frequently reported errors were name errors (31.7%), duplication of patient records (29.3%), and missing wristbands (10.6%); The least common reports were found to be wrong wristband (0.7%), patients using someone else's ID (1.7%), and wrong gender (1.7%) (Vijenthira, 2008).

Yao et al. (2018) examined 44,691 incident reports and found that the transfusion reaction rate was 3.5%. Fastman et al. (2011) found that 40% of blood transfusion-related events were due to errors in the post-analysis phase. In their study in India, Elhence et al. (2012) reported 285 reports regarding transfusion between 2009 and 2010, 95% of which were near-miss events that did not harm the patient, 1.5% were adverse events, and 3.5% were events that reached the patient and did not cause any harm. has detected. Maskens et al. (2014) found that 15,134 transfusion-related events were reported between 2005 and 2010, of which 0.15% resulted in patient harm. Dubeck (2016) noted that between 2010 and 2014, healthcare facilities reported 19,687 transfusion-related incidents to Pennsylvania patient safety regulators, and 99% of them did not cause any harm to patients. The Public Health Agency of Canada (2016) found that 17,344 transfusion-related events were reported between 2012 and 2013, 6.63% of which reached the patient, and approximately 97% of events that reached the patient did not cause harm to the patient. A study conducted by the Victorian Government (2008) in Melbourne, Australia, found that 49% of 155 reported transfusion-related events were acute transfusion reactions.

According to the analysis results, a total of 111 employee safety notifications were made in 2022 and a total of 120 undesirable event notifications were made in 2023. It has been determined that 53.15% of the incidents reported within the scope of employee safety in 2022 are sharp injuries, 9.9% are blood and body fluid splashes, and 40.54% are legal incidents. It has been determined that 50.83% of the incidents reported within the scope of employee safety in 2023 were sharp injuries, 5.83% were blood and body fluid splashes, and 43.33% were legal incidents.

Akar et al. (2019) analyzed the incidents reported within the scope of employee safety in a training and research hospital between 2016 and 2018, and it was determined that 75% of the reported incidents were sharp object injuries and 25% were blood and body fluid splashes. Pıçakçıefe et al. (2024) reported that 46.6% of the participants had a sharp object injury in the last year, and 95.1% of them were injured by a needle, 22.2% by a scalpel, and 25.9% by a sharp object. It has been determined that it occurs with ampoules/vials. Dogan et al. (2016) examined the sharps injuries and their causes reported among hospital employees between January 2012 and June 2013, and found that a total of 46 sharps injuries were reported. When the causes of the reported cutting-piercing injuries were examined, it was determined that 21.9% of them were injured during blood collection, 18.8% were injured while separating medical waste, 15.6% were injured while closing the syringe cap, and 15.6% were injured while opening a vascular access.

As a result, it was concluded that the adverse event reporting system creates a reporting culture in healthcare institutions, prevents preventable errors in terms of patients, healthcare professionals and healthcare institutions by detecting them in advance and preventing their negative

consequences, and also provides a proactive approach to healthcare institutions by planning corrective and remedial activities for the undesirable events that have occurred, so that the same events do not occur again. The key to quality development in healthcare institutions is to develop a culture of learning from mistakes by carrying out such organizational studies. It is thought that increasing the awareness of healthcare professionals about adverse event reporting through continuous training will ensure patient and employee safety and increase service quality.

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